UNIVERSITI PUTRA MALAYSIA

A COMPARISON BETWEEN VISUAL IMAGERY STRATEGY AND CONVENTIONAL STRATEGY IN THE TEACHING OF ENGLISH FOR SCIENCE

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

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A COMPARISON BETWEEN VISUAL IMAGERY STRATEGY AND CONVENTIONAL STRATEGY IN THE TEACHING OF ENGLISH FOR SCIENCE

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March 2004

Chairman: Professor Hjh. Habibah bt. Elias, Ph.D.

Faculty: Educational Studies

The main purpose of the study was to investigate and compare the effectiveness between visual imagery strategy and conventional strategy in the teaching of English for Science and Technology. A total of 89 students (n=89) were assigned to two groups, where each group underwent three phases of the experiment – 1) Pre-test Phase, 2) Treatment Phase, and 3) Post-test Phase. In this study, visual imagery strategy was a teaching procedure that incorporated the use of visuals and the forming of images that suggested the kind of representations students need to conjure within the context of the topic being taught. Conventional strategy was the teaching method prescribed by the English teacher in which students' attention were directed to important facts and concepts pertaining to the topic. Evaluation to ascertain students' learning achievement was based on their pre-test and post-test scores obtained as participants performed the Language Achievement test, which included

evaluation on reading comprehension and writing skills. Analysis was also done on their language functions, vocabulary tasks, reading comprehension, and essay writing skills from the science- and technical-based lessons taught to the students. The results of the study was reported in accordance with the hypotheses developed which compared the effectiveness between visual imagery strategy and conventional strategy on dependent variables such as reading comprehension achievement, writing skills and vocabulary achievement, as well comparing the effectiveness between the two strategies used among low English proficiency and high English proficiency students.

Data analysis indicated that visual imagery strategy produced significant main effect on students' total reading comprehension and writing achievement, as compared to conventional strategy ($F(1,84) = 17.55$, $p < .000$), but there was no significant interaction effect between proficiency level and type of treatment applied ($F(1,84) = .895$, $p > .347$, with a very small effect size (eta squared = .011). Based on reading comprehension scores alone, it was found that visual imagery strategy produced significant main effect on students' reading comprehension achievement, as compared to conventional strategy ($F(1,84) = 14.03$, $p < .000$; eta squared = .143), but again, there was no significant interaction effect between proficiency level and type of treatment applied ($F(1,84) = .002$, $p > .620$; eta squared = .010). Based on writing scores alone, it was found that visual imagery did not produce significant main effect on

students' writing achievement as compared to conventional strategy($F(1,84) = 1.27$, $p = .261$). However, there was significant interaction effect between proficiency level and the treatments applied in determining students' writing achievement ($F(1,84) = 1.06$, $p < .041$, with a small effect size (eta squared = .012). Data analysis also indicated that visual imagery strategy ($M=9.93$, $SD=2.98$) did not produce significant differential effect on students' vocabulary skills performance during the treatment phase, as compared to the conventional strategy: ($M=9.37$, $SD=3.51$; $t(87)=.802$, $p=.425$).

Students' responses regarding their knowledge and perception of visual imagery strategy and its application on teaching reading comprehension and writing skills in English for Science and Technology also favored the use of visuals and imagery instructions. Lastly, it was found that students agree that visual imagery strategy should be incorporated in English for Science and Technical lessons as it helped students understand scientific and technical passages better during reading-instruction. The implication of the study suggests that visual imagery strategy can be beneficial for students learning English for Science and Technology as the strategy promoted the recall of previous knowledge and provided interaction with the content. Visual imagery strategy as a teaching method should be utilized to its full potential, as it can be beneficial in facilitating the teaching and learning of English for science and technical reading comprehension and other language skills.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

PERBANDINGAN DI ANTARA STRATEGI IMAGERI VISUAL DAN STRATEGI KONVENSIONAL DALAM PENGAJARAN BAHASA INGGERIS UNTUK SAINS

Oleh

NOOREEN BT. NOORDIN

Jun 2004

Pengerusi: **Profesor Hjh. Habibah binti Elias, Ph.D.**

Fakulti: **Pengajian Pendidikan**

Tujuan utama kajian ini adalah untuk menyiasat dan membuat perbandingan keberkesanan di antara strategi imageri visual dan strategi konvensional dalam pengajaran Bahasa Inggeris untuk Sains dan Teknologi. Sejumlah 89 orang pelajar (n=89) telah dibahagikan kepada dua kumpulan di mana setiap kumpulan telah menjalani eksperimen yang terdiri dari tiga fasa – 1) Fasa Ujian-Pra, 2) Fasa Rawatan, dan 3) Fasa Ujian-Pos. Dalam kajian ini, strategi imageri visual merupakan prosedur pengajaran yang menggabungkan penggunaan visual dan pembentukan imej yang menjurus kepada representasi minda oleh pelajar di dalam konteks pengajaran topik. Strategi konvensional merupakan kaedah pengajaran yang ditetapkan oleh guru Bahasa Inggeris di mana tumpuan pelajar diarahkan kepada fakta serta konsep yang berkait dengan topik. Penilaian pencapaian pembelajaran pelajar adalah berdasarkan kepada ujian Pencapaian Bahasa, yang mengandungi penilaian kefahaman dan

kemahiran menulis. Analisis juga dilakukan dalam kemahiran fungsi bahasa, tugasan kosa kata, kefahaman, dan penulisan esei berdasarkan pengajaran berasaskan sains dan teknikal kepada pelajar. Dapatan kajian dilaporkan bersesuaian dengan hipotesis-hipotesis yang dibina untuk membandingkan keberkesanan diantara strategi imageri visual dan strategi konvensional terhadap pembolehubah bersandar seperti pencapaian kemahiran kefahaman, penulisan esei dan kosa kata. Disamping itu, perbandingan juga dilakukan diantara kedua-dua strategi yang digunakan terhadap para pelajar yang mempunyai kemahiran Bahasa Inggeris yang lemah dan pelajar yang mempunyai kemahiran Bahasa Inggeris yang baik.

Analisis data menunjukkan strategi imageri visual menghasilkan kesan utama yang signifikan terhadap pencapaian total kefahaman dan penulisan pelajar, berbanding dengan strategi konvensional ($F(1,84) = 17.55$, $p < .000$). Namun, tidak terdapat kesan interaksi yang signifikan diantara tahap kemahiran dan jenis rawatan yang diaplikasikan ($F(1,84) = .895$, $p > .347$, saiz kesan yang kecil (kuasadua eta = .011). Berdasarkan skor kefahaman sahaja, didapati strategi imageri visual menghasilkan kesan utama yang signifikan terhadap pencapaian kefahaman pelajar, berbanding dengan strategi konvensional ($F(1,84) = 14.03$, $p < .000$; kuasadua eta = .143), namun begitu, tidak terdapat kesan interaksi yang signifikan diantara tahap kemahiran dan jenis rawatan yang diaplikasikan ($F(1,84) = .002$, $p > .620$; kuasadua eta = .010). Berdasarkan skor penulisan sahaja, didapati strategi imageri visual tidak menghasilkan kesan utama yang signifikan terhadap pencapaian penulisan pelajar, berbanding dengan strategi

konvensional ($F(1,84) = 1.27$, $p = .261$). Namun begitu, terdapat kesan interaksi yang signifikan diantara tahap kemahiran dan rawatan yang diaplikasikan dalam menentukan pecapaian penulisan pelajar ($F(1,84) = 1.06$, $p < .041$, saiz kesan yang kecil (kuasa dua eta = .012). Analisis data juga menunjukkan strategi imageri visual ($M=9.93$, $SD=2.98$) tidak menghasilkan kesan perbezaan yang signifikan terhadap prasi kemahiran kosa kata semasa fasa rawatan, berbanding dengan strategi konvensional: ($M=9.37$, $SD=3.51$; $t(87)=.802$, $p=.425$).

Respons pelajar mengenai pengetahuan dan persepsi terhadap strategi imageri visual dan aplikasinya di dalam pengajaran kemahiran kefahaman dan penulisan dalam Bahasa Inggeris untuk Sains dan Teknologi juga memihak kepada penggunaan arahan imageri dan visual. Akhir sekali, didapati pelajar bersetuju bahawa strategi imageri visual perlu dimasukkan dalam pengajaran Bahasa Inggeris untuk Sains dan Teknologi memandangkan ia membantu pelajar memahami petikan sains dan teknikal dengan lebih baik semasa pengajaran-bacaan. Implikasi kajian ini mencadangkan strategi imageri visual boleh memberi faedah di dalam pembelajaran Bahasa Inggeris untuk Sains dan Teknologi memandangkan strategi ini menggalakkan ingatan kembali pengetahuan lepas dan interaksi dengan kandungan. Strategi imageri visual sebagai kaedah pengajaran perlu digunakan sepenuhnya memandangkan ia boleh memberi manfaat dengan mempermudahkan pengajaran dan pembelajaran kemahiran kefahaman dan kemahiran bahasa Inggeris untuk sains dan teknologi yang lain.

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I certify that an Examination Committee met on 31st March 2004 to conduct the final examination of Nooreen binti Noordin on her Doctor of Philosophy thesis entitled "A Comparison Between Visual Imagery Strategy and Conventional Strategy in the Teaching of English for Science" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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This thesis submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirements for the degree of Doctor of Philosophy. The members of the Supervisory Committee are as follows:

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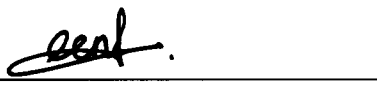
DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.



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Date: 1 JULY 2004

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

1.1 Background of the Study

The English language is a world language and its importance in education, business, government and social situations continues to grow rapidly. Since Malaysia gained its independence over forty years ago, the era of colonialism witnessed English as the main medium of instruction and communication in government schools and private institutions. Today, English is taught as a second language based on the present Integrated Secondary School Curriculum. The English language syllabus for Forms Four and Five was first introduced by the Curriculum Development Center from the Ministry of Education in 1977.

In addition, the government had included vocational and technical schools and polytechnics where English was taught to enable students to function confidently and effectively in activities which were career related. The English language served as a tool for human resource development in Malaysia's quest to become a modern and progressive society. Hence, the teaching of English for specific purposes or ESP was designed to prepare students to communicate effectively in the tasks prescribed by their study or work situation.

1.1.1 The History of ESP

From the early 1960's, English for Specific Purposes (ESP) has grown to become one of the most prominent areas of English language teaching today. The ESP movement originated from general developments in the world economy in the 1950's and 1960's that included: the rapid growth of science and technology; the increased use of English as the international language of business, science, and technology; the increased economic power of certain oil-rich countries and the increased number of students pursuing their studies in the UK, USA, and Australia (Dudley-Evans and St. John, 1998).

ESP has had a relatively long time to mature but the understanding towards the meaning of ESP itself exhibited differences in interpretations. This is due to the various influences that came together to generate the need and enthusiasm for developing ESP as a discipline. Among the descriptions given on ESP is that it is simply the teaching of English for any purpose that could be specified. Others described it as the teaching of English used in academic studies or the teaching of English for vocational or professional purposes.

The meaning of ESP was clarified by Dudley-Evans & St. John (1998) by giving an extended definition of ESP in terms of 'absolute' and 'variable' characteristics. In terms of absolute characteristics:

1. ESP is defined to meet specific needs of the learners.
2. ESP makes use of underlying methodology and activities of the discipline it serves.
3. ESP is centered on the language appropriate to these activities in terms of grammar, lexis, register, study skills, discourse, and genre.

In terms of variable characteristics:

1. ESP may be related to or designed for specific disciplines.
2. ESP may use, in specific teaching situations, a different methodology from that of the General English.
3. ESP is likely to be designed for adult learners at the tertiary level of institution or in professional work situation, as well as for students at the secondary school level.
4. ESP is generally designed for intermediate or advanced students.
5. Most ESP courses assume some basic knowledge of the language system.

(Dudley-Evans & St. Johns, 1998, p.4-5)

From the definition, it is evident that ESP involves a specific discipline, but it does not necessarily have to be in that manner, nor does it have to be aimed at a certain age group or ability range. ESP should be seen simply as an 'approach' to teaching in which all decisions concerning content and teaching strategies are based on the students' needs or reasons for learning (Hutchinson & Waters, 1987, p. 19).

Throughout its history, ESP practitioners have been concerned with identifying what the student needs and the purpose of learning. In the early years, students' needs analysis was fairly simple with easy-to-follow procedures. However, recent needs assessments have grown increasingly complex and understanding the situation in which they will be using English is quite daunting. Munby's (1978) model for needs analysis was much discussed in the late 1970's and early 1980's. The model produced a detailed profile of the learners' needs in terms of communication purposes, communicative settings, and the means of communication, as well as language skills, functions, and structures. Hutchinson and Waters (1978) argued that ESP had concentrated too much on the needs analysis, giving little focus on the learning skills needed to enable students to reach the desired end behavior. Hence, ESP materials designers and practitioners continue to improve and expand their collection and analysis techniques.

Another important aspect in the history of ESP is discourse analysis, which in ESP refers to the examination of written or oral language. Throughout its history, ESP practitioners have been concerned with identifying the important features of the authentic or genuine language of the situations where students will use English as their medium of communication (Swales, 1988 and Widdowson, 1981). Three types of approaches, including the scientific passive approach, the communicative approach, and the text feature analysis approach were used to analyze genuine discourse which serves real purposes in specified contexts for the development of ESP materials.